

CLAIMS

What is claimed is:

1. A convertible roof system for an automobile, said convertible roof system comprising:

a first hardtop roof panel movable between a closed position and an opened position;

at least a second hardtop roof panel movable between a closed position and an opened position; and

a latching system operable to directly couple said first hardtop roof panel and said second hardtop roof panel together in response to movement of said first hardtop roof panel from said opened position to said closed position.

2. The convertible roof system according to Claim 1 wherein said latching system comprises:

a connector coupled to said second hardtop roof panel; and

a latch member pivotally coupled to said first hardtop roof panel, said latch member being moveable to engage said connector thereby directly coupling said first hardtop roof panel and said second hardtop roof panel.

3. The convertible roof system according to Claim 2, further comprising:

a crank member operable to move between a first position and a second position when said first hardtop roof panel is moved into said closed position; and

a drive member operably coupled with said crank member and said latch member such that as said crank member moves from said first position to said second position, said drive member drives said latch member into engagement with said connector thereby directly coupling said first hardtop roof panel and said second hardtop roof panel.

4. The convertible roof system according to Claim 3 wherein said crank member includes a roller member coupled thereto, said roller member engageable with a roller surface of a header of the automobile to cause said crank member to move from said first position to said second position as first hardtop roof panel is positioned in said closed position.

5. The convertible roof system according to Claim 2 wherein said latch member is biased in a disengaged position from said connector.

6. The convertible roof system according to Claim 2 wherein said latch member includes a hook portion engageable with said connector.

7. A convertible roof system for an automobile, said convertible roof system comprising:

a first hardtop roof panel movable between a closed position and an opened position;

an actuator device mountable on the fixed body structure;

a fixed member on the automobile;

a drive rod operably coupled to said actuator device, said drive rod being driven in response to movement of said actuator device;

a first linkage pivotally coupled to said drive rod and said fixed member, said first linkage being moveable with said drive rod;

a second linkage pivotally coupled to said first linkage;

a third linkage pivotally coupled to said fixed member and said second linkage, said third linkage being moveable in response to said second linkage; and

a retaining member pivotally coupled to said third linkage, said retaining member further being pivotally coupled to said fixed member through a lost motion coupling, said retaining member being engageable with a striker assembly formed on said first hardtop roof panel to retain said first hardtop roof panel in said closed position.

8. The convertible roof system according to Claim 7, further comprising:

a second hardtop roof panel movable between a closed position and an opened position; and

a latching system operable to directly couple said first hardtop roof panel and said second hardtop roof panel together in response to movement of said first hardtop roof panel from said opened position to said closed position.

9. The convertible roof system according to Claim 8 wherein said latching system comprises:

a connector coupled to said second hardtop roof panel; and

a latch member pivotally coupled to said first hardtop roof panel, said latch member being moveable to engage said connector thereby directly coupling said first hardtop roof panel and said second hardtop roof panel.

10. The convertible roof system according to Claim 9, further comprising:

a crank member pivotally coupled to said striker assembly, said crank member being operable to move between a first position and a second position as said crank member contacts said fixed member; and

a drive member operably coupled with said crank member and said latch member such that as said crank member moves from said first position to said second position, said drive member drives said latch member into engagement with said connector.

11. The convertible roof system according to Claim 10 wherein said crank member includes a roller member coupled thereto, said roller member engageable with a roller surface on said fixed member to cause said crank member to move from said first position to said second position as first hardtop roof panel is positioned in said closed position.

12. The convertible roof system according to Claim 9 wherein said latch member is biased in a second position disengaged from said connector.

13. The convertible roof system according to Claim 7 wherein said retaining member being pivotally coupled to said third linkage includes a cam pin extending from said retaining member, said cam pin operably engaging a first slot formed in said third linkage and a second slot formed in said fixed member.

14. The convertible roof system according to Claim 13 wherein said second slot is generally angular shaped.

15. The convertible roof system according to Claim 13 wherein said latch member includes a hook portion engageable with said connector.

16. The convertible roof system according to Claim 7 wherein said actuator device is a motorized actuator.

17. The convertible roof system according to Claim 7, further comprising:

a pin member formed on said striker assembly; and

a switch member mounted on said fixed member, said switch member being operable to output a signal when said pin member engages said switch member once said first hardtop roof panel is in said closed position.

18. A convertible roof system for an automobile, said convertible roof system comprising:

a first hardtop roof panel movable between a closed position and an opened position;

a second hardtop roof panel movable between a closed position and an opened position;

a fixed member mountable to the automobile;

a connector coupled to said second hardtop roof panel;

a latch member pivotally coupled to said first hardtop roof panel, said latch member being moveable to engage said connector thereby directly coupling said first hardtop roof panel and said second hardtop roof panel;

a crank member pivotally coupled to said first hardtop roof panel, said crank member being operable to move between a first position and a second position when said first hardtop roof panel contacts the fixed member; and

a drive member operably coupled with said crank member and said latch member such that as said crank member moves from said first position to said second position, said drive member drives said latch member into engagement with said connector thereby directly coupling said first hardtop roof panel and said second hardtop roof panel.

19. The convertible roof system according to Claim 18 wherein said crank member includes a roller member coupled thereto, said roller member

engageable with a roller surface on the fixed member to cause said crank member to move from said first position to said second position as first hardtop roof panel is positioned in said closed position.

20. The convertible roof system according to Claim 18 wherein said latch member is biased in a disengaged position from said connector.

21. The convertible roof system according to Claim 18 wherein said latch member includes a hook portion engageable with said connector.

22. The convertible roof system according to Claim 18, further comprising:

an actuator device mounted on said fixed member;

a drive rod operably coupled to said actuator device, said drive rod being driven in response to movement of said actuator device;

a first linkage pivotally coupled to said drive rod and said fixed member, said first linkage being moveable with said drive rod;

a second linkage pivotally coupled to said first linkage;

a third linkage pivotally coupled to said fixed member and said second linkage, said third linkage being moveable in response to said second linkage; and

a retaining member pivotally coupled to said third linkage, said retaining member further being pivotally coupled to said fixed member through a lost motion cam slot, said retaining member being engageable with a striker assembly formed on said first hardtop roof panel to retain said first hardtop roof panel in said closed position.

23. A method of actuating a convertible roof system of an automotive vehicle, said convertible roof system having a first hardtop roof panel having a crank member pivotally coupled thereto, a second hardtop roof panel, a top stack mechanism supporting the first and second hardtop roof panels, and a latching system for coupling the first hardtop roof panel to the second hardtop roof panel, said crank member being pivotally coupled to the latching system, said method comprising:

actuating said top stack mechanism to move said first hardtop roof panel and said second hardtop roof panel to a closed position such that said crank member pivots in response to contact of said crank member with a header support of the automotive vehicle;

driving said latching system by said pivoting of said crank member;
and

coupling said first hardtop roof panel and said second hardtop roof panel together.

24. A method of actuating a convertible roof system of an automotive vehicle, said convertible roof system having a first hardtop roof panel, a striker assembly coupled to said first hardtop roof panel, and a fixed member coupled to the automotive vehicle, said method comprising:

driving an actuator device coupled to a drive rod, said drive rod driving a first linkage pivotally coupled to said housing, said first linkage driving a second linkage, said second linkage driving a third linkage, said third linkage driving a retaining member via a lost motion cam assembly; and

engaging and retaining said striker assembly of said first hardtop roof panel with said retaining member.

25. The method according to Claim 24 further comprising:

providing a second hardtop roof panel;

providing a latching system having a crank member pivotally coupled to said striker assembly, a connector coupled to said second hardtop roof panel, a latch member pivotally coupled to said first hardtop roof panel, and a drive member interconnecting said crank member and said latch member; and

pivoting said crank member in response to said step of engaging and retaining said striker assembly of said first hardtop roof panel with said retaining member;

driving said drive member by said pivoting of said crank member;

coupling said latch member with said connector to retain said first hardtop roof panel with said second hardtop roof panel.

26. The method according to Claim 24, further comprising:
biasing said latch member disengaged from said connector.